



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of:

Jean Francois Benoist

Application No.: 09/733,041

Filed: December 11, 2000

Docket No.: 108121

For: A NOZZLE FOR AN AEROSOL RECEPTACLE

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BRIEF ON APPEAL

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Appeal from Group 3751

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400
Attorneys for Appellants

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I. Introduction

This Appeal is from an Office Action mailed January 15, 2002, finally rejecting claims 1-39 of the above-identified patent application. No claims are allowed.

A. Real Party-in-Interest

The real party-in-interest for this Appeal in the present application is L'Oreal, by way of an assignment recorded in the U.S. Patent and Trademark Office at Real 011613, Frame 0402.

B. Statement of Related Appeals and Interferences

There are presently no appeals or interferences, known to Appellant, Appellant's representatives or the assignee, which will directly affect or be directly affected by, or have a bearing on the Board's decision in the impending appeal.

C. Status of Claims

Claims 1-39 are pending, stand rejected, and are on appeal. The claims on appeal are set forth in the attached Appendix. Claim 1 is an independent claim, claims 2-39 depend from claim 1.

D. Status of Amendments

No Amendments After Final Rejection Under 35 U.S.C. §1.116 were filed in response to the January 15, 2002 Final Rejection. All of the claim amendments have been entered of record in Applicant's November 30, 2001 Amendment.

II. Summary of the Invention

A. General

The claimed invention is for a nozzle for an aerosol receptacle that can be used with liquefied propellant gas. The object of the invention is to provide a nozzle that is dimensioned to achieve a particularly desirable spray that is more opaque, drifts downward and gives a more gentle impression. Such a spray may normally be obtained using a compressed propellant gas, such as air or nitrogen. However, the object of the claimed

invention can provide the same type of spray using either a liquefied propellant gas or a compressed propellant gas.

As disclosed in the specification at page 1, line 27 to page 2, line 31, a particularly desirable spray is achieved by a swirling effect nozzle having substance feed channels opening out into a swirling chamber in communication with an outlet orifice, wherein the ratio A_p/A_o is less than or equal to 0.5, and the ratio $A_p/(D_s \bullet D_o)$ is less than or equal to 0.2; where: A_p is the smallest total section offered by the channels to the passage of the substance; A_o is the section of the outlet orifice; D_o is the diameter of the outlet orifice; and D_s is the diameter of the swirling chamber. The section A_o of the outlet orifice is the smallest section through which the substance may pass.

The Applicant has observed that a particularly satisfactory spray is obtained when the above conditions are met. By means of the claimed invention, it is possible to obtain a spray that is relatively opaque and that puffs relatively gently, thus enabling the droplets to come together and fall. As disclosed in the specification at page 1, lines 14-23, the use of liquefied propellant gas produces a spray that is fine, nearly transparent, and squirts hard. Liquefied propellant gas is also capable of presenting sneeze-inducing properties.

B. The Claimed Invention

1. Claim 1

Claim 1 recites a swirling effect nozzle having substance feed channels opening out into a swirling chamber communicating with an outlet orifice, wherein the ratio A_p/A_o is less than or equal to 0.5, and the ratio $A_p/(D_s \bullet D_o)$ is less than or equal to 0.2; wherein:

A_p is the smallest total section offered by the channels to the passage of the substance; A_o is the section of the outlet orifice; D_o is the diameter of the outlet orifice; and D_s is the diameter of the swirling chamber.

2. Claims 2-39

Additional features of the invention recited in claim 1 are found in dependent claims 2-39. Of these, only claims 15 and 39 are being separately discussed.

Claim 15 is directed to a receptacle according to claim 13, containing a propellant gas constituted by a non-liquefied compressed gas.

Claim 39 is directed to a receptacle according to claim 15, containing compressed air.

III. Issues and Rejections

A. The 35 U.S.C. §112 Rejection

The January 15, 2002 Final Rejection rejects claims 15 and 39 under 35 U.S.C. §112, second paragraph as being indefinite. In particular, the Examiner asserts that the recitation of a broad and a narrow limitation in claim 15 renders the claim indefinite. The Examiner also asserts that claim 39 is unclear.

The issues on appeal are whether claims 15 and 39 are definite.

B. The Prior Art Rejections

The January 15, 2002 Final Rejection rejects claims 1, 3, 5, 7, 10-12, 23, 33 and 34 under 35 U.S.C. §102(b) as being anticipated by Lund, U.S. Patent No. 5,711,488. Claims 2, 4, 6, 8, 9 and 24-32 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lund, and claims 13-22 and 35-39 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lund in view of Heeb et al., U.S. Patent No. 4,322,037. Claims 1-39 are also rejected under 35 U.S.C. §103(a) as being unpatentable over Burke et al., U.S. Patent No. 4,071,196.

The issues on appeal are whether the subject matter of claim 1 is anticipated by, or obvious over Lund, alone or in combination with Heeb et al. and/or Burke et al.

IV. Grouping of Claims

Each claim of this patent application is separately patentable, and upon issuance of a patent, will be entitled to a separate presumption of validity under 35 U.S.C. §282. For convenience in the handling of this Appeal, the claims are grouped as follows: Group 1,

claim 15 (for §112 purposes); Group 2, claim 39 (for §112 purposes); and Group 3, claims 1-39 (for novelty purposes).

Each of Groups 1-3 will be argued separately in the following arguments. The groups do not stand or fall together.

V. Argument

A. The Law

1. Law Regarding Claim Requirements Under 35 U.S.C. §112, Second Paragraph

Claim requirements are defined in 35 U.S.C. §112, second paragraph as follows:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Law Regarding Factual Inquiries to Determine Novelty and Obviousness/Non-obviousness

A claim is anticipated under 35 U.S.C. §102 only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in complete detail as contained in the claim. See MPEP §2131.

When the prior art discloses a range which touches, overlaps, or is within the claimed range, but no specific examples falling within the claimed range are disclosed, a case-by-case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with "sufficient specificity to constitute anticipation under the statute." What constitutes a "sufficient specificity" is fact dependent.

If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute anticipation of the claims. The unexpected results

may also render the claims unobvious. The Examiner must, in this case, provide reasons for anticipation as well as a motivational statement regarding obviousness. See MPEP §2131.03.

Several basic factual inquiries must be made to determine obviousness or nonobviousness of patent application claims under 35 U.S.C. §103. These factual inquiries are set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1996):

Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined.

As stated by the Federal Circuit in In re Ochiai, 37 USPQ2d 1127, 1131 (Fed. Cir. 1995):

[t]he test of obviousness *vel non* is statutory. It requires that one compare the claim's subject matter as a whole with the prior art to which the subject matter pertains. 35 U.S.C. §103.

The inquiry is thus highly fact-specific by design.... When the references cited by the Examiner fail to establish a *prima facie* case of obviousness, the rejection is improper and will be overturned. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). (Emphasis added.)

In rejecting claims under 35 U.S.C. §103, an Examiner bears an initial burden of presenting a *prima facie* case of obviousness. A *prima facie* case of obviousness is established only if the teachings of the prior art would have suggested the claimed subject matter to a person of ordinary skill in the art. If an Examiner fails to establish a *prima facie* case, the rejection is improper and will be overturned. See In re Rijckaert, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993). "If examination...does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to the grant of the patent." In re Oetiker, 977 F.2d 1443, 1445-1446, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

Moreover, "to imbue one of ordinary skill in the art with knowledge of the invention, where no prior art reference or references of record convey or suggest that knowledge, is to

fall victim to the insidious affect of hindsight syndrome wherein that which only the inventor taught is used against a teacher." See W.L. Gore and Assoc. v. Garlock, Inc., 721 F.2d 1540, 1543, 220 USPQ 303, 312-13 (Fed. Cir. 1983).

B. Claims 15 and 39 are Definite

In the Office Action, claims 15 and 39 are rejected under 35 U.S.C. §112, second paragraph as being indefinite. Applicants disagree. Claim 15 is not unclear or indefinite. The claim plainly recites that the receptacle contains a propellant gas that is a non-liquefied compressed gas. This does not recite just any propellant gas (i.e., a broad limitation), but is instead clearly limited to the specific enumerated type of a propellant gas, a non-liquefied compressed gas. As such, it is definite and clear.

Regarding claim 39, this claim depends from claim 15 and further adds that the gas is compressed air. When read in light of the specification and claim 15, it is believed self-evident that claim 39 further limits the non-liquefied compressed gas to compressed air. As such, claim 39 is also deemed concise and definite in its current form.

C. Claims 1-39 are Distinguishable Over the Lund Reference

In the Office Action, it is stated that claims 1, 3, 5, 7, 10-12, 23, 33 and 34 are rejected under 35 U.S.C. §102(b) as being anticipated by Lund. Specifically, it is stated that Lund shows a dispensing head with a nozzle having a swirl chamber with a chamber diameter CD in the range of .05 mm to 1.5 mm, discharge orifice with a diameter OD of about .35 mm, center post and vanes having an individual exit area EA in the range of .02 mm to .07 mm. It is further stated that the disclosed values in Lund can be used to meet the ratio limitations as recited in the claims. For example, it is stated that using the values disclosed in Lund, the ratio of: $A_p/A_o = 0.415$ may be arrived at, which is less than or equal to 0.5, which is the subject limitation of the claims. In making this rejection, the Examiner uses the smallest

individual exit area (0.02 mm^2) and the fewest number of individual vanes (2) to arrive at the valve $A_p = 0.04 \text{ mm}^2$ ($2 \times 0.02 \text{ mm}$).

However, when read as a whole, Lund teaches in col. 3, lines 1-9 for the cumulative vane exit area to be in a range of between about 0.18 and about 0.36 mm^2 . Additionally, the Lund reference discloses a preferred number of at least 3 vanes. Thus, the value for $A_p = 0.04 \text{ mm}^2$ as used by the Examiner, is far away from the preferred range indicated by Lund. More importantly, when read as a whole, Lund teaches that when using a smaller exit area, a larger number of vanes should be used and when a larger exit area is provided, a smaller number of vanes should be used so as to retain a cumulative exit area in the desired range. The Examiner's construction ignores such express teachings and instead uses both the smallest disclosed individual exit area and the smallest number of vanes. Such a construction is not a fair "read" of the teachings of Lund.

As mentioned above, Lund would suggest to a person of ordinary skill in the art that the smaller the individual cross-sectional vane exit area, the greater the number of vanes that would be necessary to practice the invention. For instance, in the case of individual cross-sectional vane exit areas, in the range of $.03$ to $.04 \text{ mm}$, a minimum of 6 vanes would be necessary to reach the preferred cumulative vane exit area of 0.18 to 0.36 mm^2 as disclosed in Lund. Thus, there is no express teaching in Lund to use the lowest possible individual vane exit area, and the least amount of vanes as relied upon in the Office Action in making the rejection. In fact, Lund would teach against such, at least when read as a whole. Thus, a person of ordinary skill in the art would not have been led to practice the present invention based on the teachings of Lund. The only teaching of such is Applicant's invention, the use of which by the Examiner constitutes impermissible hindsight consideration.

The Examiner has also used a value for a discharge orifice diameter equal to 0.5 mm . While this value is mentioned in the passage at col. 2, line 21 of the specification, relative to

the prior art, this value is far away from the only disclosed value used in the Lund invention of 0.35 mm. See col. 3, line 8. There is no indication that the other specific variables taught in Lund could be used with the orifice diameter of the prior art. As such, the preferred values disclosed by Lund for discharge orifice diameter and A_p are far away from the values indicated in the Office Action for use of the equations of the subject invention. The only possible motivation for such "picking and choosing" is Applicant's specification, the use of which constitutes impermissible hindsight consideration.

Using what Lund actually teaches results in a value outside the claimed range.

If the values of the preferred embodiment of Lund are used:

$$0.18 \leq A_p \leq 0.36 \text{ mm}^2$$

$$A_o = 3.14 \times 0.35^2/4$$

We have:

$$0.18/(3.14 \times 0.35^2/4) \leq A_p/A_o \leq 0.36/(3.14 \times 0.35^2/4)$$

i.e. $1.87 \leq A_p/A_o \leq 3.74$, while claim 1 recites $A_p/A_o \leq 0.5$.

If we use values given by Lund concerning D_s and d_o (see column 3, lines 3-9):

$$1.3 \leq D_s \leq 2.0 \text{ mm}$$

$$d_o = 0.35 \text{ mm}$$

We have

$$0.18/(2 \times 0.35) \leq A_p/(D_s \cdot d_o) \leq 0.36/(1.3 \times 0.35)$$

i.e. $0.26 \leq A_p/(D_s \cdot d_o) \leq 0.79$, instead of $A_p/(D_s \cdot d_o) \leq 0.2$ as recited in claim 1.

Without Applicant's recognition of the problem, and of the solution exemplified by the claimed equation, one would not have been led to use the claimed size relationship. It is submitted that these values have been arbitrarily chosen by the Examiner, contrary to the teachings of Lund.

It is further submitted that the claimed invention produces unexpected results in that the values chosen to meet the limitations of the ratios of the recited claims produce a spray that is more opaque, that drifts downwards in a desirable fashion, and also creates a more gentle impression. As such, the results produced by choosing values within the limitations of the claimed invention produce a more desirable effect on the resulting spray than that of the Lund reference. Lund has no such appreciation of such problems or a solution thereto. As such, because each and every feature of claim 1 is not found expressly in Lund, Lund cannot anticipate claim 1 or the claims dependent therefrom.

It is also stated in the Office Action that claims 2, 4, 6, 8, 9 and 24-32 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lund. It is submitted that these claims are allowable for the dependency on an allowable base claim. In the Office Action, it is stated that Lund discloses, in col. 5, lines 47-52, that the exit area of the vanes and the proper sizing of the chamber diameter and orifice diameter are critical to achieving a desired spray characteristic. Based on this, the Examiner states that one of ordinary skill in the art using Lund's atomizing device, wanting a desired spray characteristic, would choose a value from the range as disclosed by Lund to achieve the desired spray, because it has been held that the discovering an optimum value of a result effective variable involves only routine skill in the art.

The Appellant disagrees with this statement because Lund fails to identify the desired spray that the claimed invention is capable of producing, and only makes a general statement regarding the size of the individual nozzle elements. As such, one of ordinary skill in the art would not find motivation in the teachings of Lund to arrive at the subject invention particularly by avoiding the ranges that Lund teaches as preferred, and combining parameters that Lund suggests are incompatible. In particular, because Lund fails to recognize the

problems solved by the invention and does not appreciate the unexpected results, the claimed invention would not have been obvious.

Claims 13-22 and 35-39 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lund in view of Heeb et al. It is submitted that Heeb fails to overcome the deficiencies of Lund and that claims 13-22 are allowable for their dependency on an allowable base claim 1 and for the additional features recited therein.

Claims 1-39 are rejected under 35 U.S.C. §103(a) as being unpatentable over Burke et al. As stated in the Office Action, Burke fails to disclose the ranges of the swirl chamber diameter, exit area of the channels, or orifice diameter. As such, the Examiner has failed to make a *prima facie* case of obviousness and instead has made an unsubstantiated assertion that the various missing features would have been obvious. Because Burke fails to appreciate the problems overcome by the invention, one of ordinary skill in the art would not have been led to use the recited specific values. As such, Burke cannot be used to sustain a rejection under 35 U.S.C. §103(a).

D. Summary

While Lund discloses broad ranges for the sizing of the individual nozzle elements, it fails to disclose the combination of parameters needed to achieve the subject invention and the desirable effect that is produced by the subject invention. As such, Lund cannot be used as an anticipating reference under 35 U.S.C. §102. Lund also cannot be used to sustain a rejection under 35 U.S.C. §103, as it would not have been obvious to one of ordinary skill in the art to modify teachings of Lund to arrive at the claimed invention, as Lund fails to disclose the desirable effects of the subject invention and teaches away from the combination of parameters needed to achieve the subject invention. It is further submitted that Burke and Heeb also failed to overcome the deficiencies of Lund, and thus also cannot be used to sustain rejections under 35 U.S.C. §103. No motivation exists to modify the disclosures of

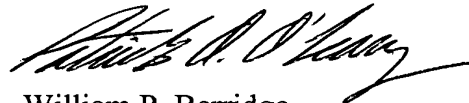
the applied references to attain the elements and advantages of the Appellant's claimed invention. Such a modification constitutes an impermissible use of hindsight reasoning based on the Appellant's disclosure.

VI. Conclusion

For all the reasons discussed above, it is respectfully submitted that the Lund reference fails to anticipate the claimed invention and that it would not have been obvious to a person of ordinary skill in the art, at the time the invention was made, to practice the claimed invention in view of the applied references.

For all the above reasons, Appellant respectfully requests this Honorable Board to reverse the rejections of claims 1-39.

Respectfully submitted,



William P. Berridge
Registration No. 30,024

Patrick O. O'Leary
Registration No. 51,035

WPB:POO/djb

Enclosure:
Appendix

Date: August 15, 2002

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461
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APPENDIX

CLAIMS:

1. A swirling effect nozzle having substance feed channels opening out into a swirling chamber communicating with an outlet orifice, wherein the ratio A_p/A_o is less than or equal to 0.5 and the ratio $A_p/(D_s \cdot d_o)$ is less than or equal to 0.2;

where:

A_p is the smallest total section offered by the channels to the passage of the substance;

A_o is the section of the outlet orifice;

d_o is the diameter of the outlet orifice; and

D_s is the diameter of the swirling chamber.

2. A nozzle according to claim 1, wherein the ratio L_s/D_s is less than or equal to 0.25;

where:

L_s is the length of the portion of the swirling chamber parallel to the axis of the nozzle and measured along the axis of the nozzle.

3. A nozzle according to claim 1, having a plurality of channels.

4. A nozzle according to claim 1, wherein the ratio A_p/A_o is less than or equal to 0.4.

5. A nozzle according to claim 1, wherein the ratio $A_p/(D_s \bullet d_o)$ is less than or equal to 0.15.

6. A nozzle according to claim 1, wherein the ratio L_s/D_s is less than or equal to 0.2.

7. A nozzle according to claim 1, wherein the outlet orifice is circularly cylindrical and connects to the swirling chamber via a tapering chamber that converges towards the outlet.

8. A nozzle according to claim 1, wherein d_o lies in the range 0.4 mm to 1.2 mm; where:

d_o is the diameter of the outlet orifice.

9. A nozzle according to claim 1, wherein L_s lies in the range 0.1 mm to 0.2 mm; where:

10. A nozzle according to claim 1, wherein D_s lies in the range 0.6 mm to 1.4 mm; where:

D_s is the diameter of the swirling chamber.

11. A dispenser head, including a nozzle as defined in the claim 1.

12. A head according to claim 11, wherein the nozzle is engaged on a center post.

13. An aerosol receptacle, including a nozzle as defined in claim 1.

14. A receptacle according to claim 13, containing a liquefied propellant gas.

15. A receptacle according to claim 13, containing a propellant gas constituted by a non-liquefied compressed gas.

16. A receptacle according to claim 14, containing a cosmetic.

17. A receptacle according to claim 16, wherein said cosmetic is a hair spray.

18. A receptacle according to claim 16, wherein the cosmetic is a deodorant.

19. A receptacle according to claim 14, wherein the mean droplet size of the spray, when the receptacle is full and at 20° C, lies in the range 30 μ m to 100 μ m.

20. A receptacle according to claim 14, wherein the flow rate, when the receptacle is full and at 20° C, lies in the range 0.3 g/s to 1.5 g/s.

21. A receptacle according to claim 14, wherein the puff force, measured at 20° C and when the receptacle is full is less than or equal to 0.05 N.
22. A receptacle according to claim 14, wherein the pressure inside the receptacle, when it is full and at 20° C, lies in the range 2 bars to 6 bars.
23. A nozzle according to claim 3, having two to six channels.
24. A nozzle according to claim 3, having four channels.
25. A nozzle according to claim 4, wherein the ratio A_p/A_o is less than or equal to 0.3.
26. A nozzle according to claim 4, wherein the ratio A_p/A_o lies in the range 0.15 to 0.35.
27. A nozzle according to claim 4, wherein the ratio A_p/A_o lies in the range 0.2 to 0.3.
28. A nozzle according to claim 5, wherein the ratio $A_p/(D_s \cdot d_o)$ lies in the range 0.1 to 0.15.
29. A nozzle according to claim 5, wherein the ratio $A_p/(D_s \cdot d_o)$ lies in the range 0.11 to 0.14.
30. A nozzle according to claim 6, wherein the ratio L_s/D_s is less than or equal to 0.15.
31. A nozzle according to claim 6, wherein the ratio L_s/D_s lies in the range 0.1 to 0.15.
32. A nozzle according to claim 8, wherein d_o lies in the range 0.6 mm to 0.8 mm.
33. A nozzle according to claim 10, wherein D_s lies in the range 0.8 mm to 1.2 mm.
34. A nozzle according to claim 10, wherein D_s is close to 1 mm.

35. A receptacle according to claim 19, wherein the mean droplet size of the spray, when the receptacle is full and at 20° C, lies in the range 40 μm to 100 μm .
36. A receptacle according to claim 19, wherein the mean droplet size of the spray, when the receptacle is full and at 20° C, is close to 60 μm .
37. A receptacle according to claim 20, wherein the flow rate, when the receptacle is full and at 20° C, lies in the range 0.4 g/s to 1 g/s.
38. A receptacle according to claim 21, wherein the puff force, measured at 20° C and when the receptacle is full, is close to 0.025 N.
39. A receptacle according to claim 15, containing compressed air.